

Replace the paragraph beginning at page 3, line 10 as follows:

A3 -- The object of the invention is to provide a method and apparatus for improving the testing of substrates having a large surface area.

SUMMARY OF THE INVENTION --

Replace the paragraph beginning at page 3, line 14 as follows:

A4 -- With ever-increasing deflection angles the detector signal also changes in so far as the location of the secondary particles emitted on the substrate relative to the position of the detector has an increasing influence on the number of secondary particles reaching the detector. In other words, the detector signal varies to a large extent with the location of the emitted secondary particles relative to the position of the detector. --

Replace the paragraph bridging pages 3 and 4, beginning at line 20 of page 3 as follows:

A5 -- In order to achieve a uniform signal evaluation over the entire area, therefore, the location of the secondary particles emitted on the substrate relative to the position of the detector is taken into account during testing. In this case there are in principle two variants:

1. Means are provided which guide the secondary electrons from a location or site on the substrate to the detector and are controlled in such a way that a detector signal which is independent of the location is set at the detector.

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Cont. 2. The location or site of the emitted secondary electrons is not taken into account until the evaluation, i.e. in a comparison with the desired reference signal, in which case either the detector signals are compared with location-dependent desired signals or the detector signals are corrected as a function of the location and then compared with a desired signal. --

Page 4, cancel the paragraph beginning at line 11 and ending on line 13 in its entirety and replace with the following:

-- THE DRAWING

A6 The single drawing figure is a schematic diagram of apparatus for performing the testing method according to the invention. --

Replace the paragraph beginning at page 4, line 14 as follows:

-- THE PREFERRED EMBODIMENT

A7 The apparatus shown in the drawing consists essentially of a particle beam source 1, particularly an electron beam source for producing a particle beam which traverses a path designated by the arrow 2, an optical system 3 for focusing the particle beam, a deflecting arrangement 4 and a detector 5. --

Replace the paragraph beginning at page 5, line 1 as follows:

A8 -- The particle beam is directed onto a selected site of a substrate 8 to be examined, secondary particles being

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CONT.

emitted along a second path shown by the arrow 9, at least some of the emitted secondary particles being detected by the detector 5. In the detector 5 the detected secondary particles are converted into an electrical detector signal 10 which is supplied to an arrangement 11 for evaluation of the detector signal where the detector signal 10 is compared with a desired or reference signal. --

Replace the paragraph beginning at page 5, line 7 as follows:

A9
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TOP

-- In order to improve the testing process it is provided according to the invention that the location or site of the secondary particles emitted on the substrate 8 relative to the position of the detector 5 is taken into account during testing. In this case two variants are conceivable in principle which can be used separately or can also be advantageously combined with one another. --

Replace the paragraph bridging pages 5 and 6, beginning at line 16 of page 5 as follows:

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-- The underlying idea of this method is that in the case of two different locations x_1 and x_2 on the substrate 8 different detector signals are produced if the other conditions, i.e. in particular the number of emitted secondary particles, are identical. This is based on the fact that the emitted particles are emitted in different directions on the substrate 8 and it is therefore necessary to guide the secondary electrons to the detector. For this extraction electrodes are provided which lead to satisfactory results for small scan areas of a few

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Cont,

square centimetres. With large deflections, however, markedly different detector signals can occur, although the object examined on the substrate functions in a completely identifiable manner and only its position on the substrate leads to a reduced value detector signal which possibly no longer reaches the necessary desired value. --

Replace the paragraph beginning at page 6, line 12 as follows:

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-- The apparatus illustrated in the drawing therefore has a control arrangement 13 which is connected to the deflecting arrangement 4 and the means 12 for guiding the secondary particles. In this way a synchronised control of the means 12 for guiding the secondary particles is ensured as a function of the location or site to which the particle beam is directed. --

Replace the paragraph beginning at page 7, line 1 as follows:

A12

-- The second variant according to the invention is based upon the fact that the dependence of the detector signal upon the location of the emitted secondary particles is not taken into consideration until the evaluation of the detector signal. Thus it would be conceivable that the detector signals determined in each case are compared with respective location-dependent desired or reference signals. As an alternative to this, the location-dependent detector signal could first of all be corrected to a location-independent detector signal in order then to be compared with a desired or reference signal. --
